

DIFFERENTIAL AMPLIFIER WITH LARGE INPUT COMMON MODE SIGNAL RANGE

ABSTRACT OF THE DISCLOSURE

A design for a differential amplifier with a large input common mode signal range. The differential amplifier comprises two differential pairs, each having two amplifying MOSFETs. A source follower is connected to the gate terminal of each amplifying MOSFET in one of the differential pairs. A differential signal applied to the differential amplifier comprises two separate signals. Each separate signal is applied to the gate terminals of both the amplifying MOSFET in the differential pair not driven by the source follower and the driven MOSFET of the source follower. The differential amplifier further comprises a pair of switch MOSFETs connected to a current source MOSFET. The switch MOSFETs act to control the distribution of the total current flowing from the current source MOSFET and, consequently, to determine which differential pair works dominantly to amplify the input signals. Each source follower acts to offset the voltage of its input signal to compensate for the range loss due to the bias voltages and the threshold voltages within the differential amplifier.

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